https://doi.org/10.29321/MAJ.10.A03368

Madras agric. J. 61 (1 & 2): 31–34, Jan. & Feb. 1974

Host Range of Groundnut Mosaic Virus of Tamil Nadu

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ABSTRACT

Mosaic virus of Tamil Nadu passed on to three out of thirty species of plants belonging to six families of dicotyledons. The present studies reveal that mosaic virus of Tamil Nadu differs from that of rosette virus in its mode of transmission and host range. This virus does not cause local lesions on *Chenopodium album* and *C. amaranticolor* as rosette virus. Further no infection was obtained on *Cajanus cajan* with mosaic virus.

INTRODUCTION

Mosaic disease is one of the viroses of groundnut occurring in Tamil Nadu. It was first observed in 1949 on the farm of the Indian Agricultural Research Institute, New Delhi in India. Susequently its occurrence in Tamil Nadu was observed in 1964 (Kousalya *et al.* 1970). Nariani and Dhingra (1963) described the symptoms of the disease and established its viral nature by graft transmission. They also reported the varietal reaction of ten promising strains of groundnut obtained from Punjab to mosaic virus. Chenulu *et al.* (1966) have pointed out the highly destructive nature of the disease and estimated loss in yield from 29-100 per cent by kernal weight and 22-97per cent by pod weight depending upon the intensity of the disease. Kousalya *et al.* (1970) reported that there was a significant reduction in the number of root nodules, number and dry weight of mature, immature and tender pods produced by mosaic diseased plants both under field and glass house conditions. The present paper deals with host range of mosaic virus of groundnut.

MATERIALS AND METHODS

Mosaic virus culture obtained in Coimbatore was maintained by grafting in TMV. 2 variety of groundnut plants under insect-proof glass house conditions. Thirty species of plants belonging to six families were selected for the studies. Approach grafting was adopted on 30 days old healthy test plants. The grafted test plants were periodically observed for the development of symptoms.

Sap transmission studies were also conducted on two species of *Chenopodium* and *Nicotiana glutinosa*.

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TABLE 1. Host range of groundnut mosaic virus

Plant species tested	By approach grafting			
	Number of plants tested	Number of successful grafts	Number of plants infected	Percentage of infection
1	2	3	4	5
I. Papilionaceae				
Pisum sativum Linn.	20	18	...	...
Phaseolus vulgaris Linn.	20	17	...	...
Vigna sinensis Endl.	20	18	6	33.3
Medicago sativa Linn.	20	18	...	...
Crotolaria juncea Linn.	20	20	...	...
Trifolium pratense Linn.	20	18	...	...
T. ripens Linn.	20	18	...	...
Stylosanthes mucronata Willd.	20	20	...	...
Phaseolus aureus Han.	20	18	...	...
P. mungo Linn.	20	20	...	...
P. lathyroides Linn.	20	18	6	33.3
Cicer arietinum Linn.	20	16	...	–
Dolichos lab-lab Linn.	20	18	...	...
Cyamopsis psoralioides DC	20	15	...	...
Trigonella foenumgraecum Linn.	20	18	...	...
Tephrosia tinctoria Pers.	20	20	...	...
Gliricidia maculata H. B. & K.	20	20	...	...
Sesbania speciosa Taub. ex. Engl	20	20	...	...
Dolichos biflorus Linn.	20	17	17	100.0
Cajanus cajan Druce	20	20	...	...

Table 1 [Continued]

1	2	3	4	5
Seshania aculeata Poir.	20	17	...	...
II. Solanaceae				
Nicotiana tabacum Linn. var. White Burley	20	18	...	...
Datura stramoinum Linn.	20	20	...	...
Solanum melongena Linn.	20	16	...	...
III. Compositae				
Tridax procumbens Linn.	20	16	...	...
IV. Caesalpinaeae				
Caesalpinia pulcherrima Swtz.	20	18	...	...
V. Amaranthaceae				
Gomphrena globosa Linn.	20	16	...	...

Plant species tested	By approach grafting				By sap		
	1	2	3	4	5	6	7
Chenopodiaceae							
Chenopodium album Linn.	20	18	...	...	20	...	–
C. amaranticolar Coste and Reyn.	20	19	...	...	20	...	...
Solanaceae							
Gicotiana glutionosa Linn.	20	17	...	...	20	...	...

1. Number of plants tested 2. Number of successful grafts 3. Number of plants infected
4. Percentage of infection 5. Number of plants inoculated 6. Number Infected
7. Percentage of infection

Infective sap was extracted from the young developing leaves of mosaic diseased plants in 0.2 M Sodium borate solution at pH 8.5. The extracted sap after filtration was rubbed on to the carborundum-dusted young leaves of healthy test plants. The sap inoculated test plants were under observation for the development of symptoms. Suitable controls were maintained.

RESULTS AND DISCUSSION

Three out of thirty species of test plants belonging to 6 families were found to be susceptible to mosaic virus (Table 1). The reaction on these three susceptible hosts are described below.

1. *Vigna sinesis* Endl: Mosaic and mottling were seen on the leaves. The infected leaves were crinkled and reduced in size. The infected plants were markedly stunted. The infection was systemic.

2. *Dolichos biflorus* Linn: The leaves of infected plants were reduced in size, curled and showed veinal necrosis. Systemic infection was seen.

3. *Phaseolus lathyroides* Linn Light and dark green mosaic mottling symptoms were seen on the leaves of mosaic diseased plants fifteen days after grafting. The infected leaves were very much reduced in size. Systemic symptoms were noticed.

No infection was observed on *Chenopodium album* Linn. *C. amarantieolor* Coste. and Reyn and *Nicotiana glutinosa* Linn.

ACKNOWLEDGEMENT

The authors are thankful for the financial assistance by the Indian Council of Agricultural Research New Delhi.

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